

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 13 JUL 2006

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Applicant's or agent's file reference BP111621/KET	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/FI2005/000008	International filing date (day/month/year) 05.01.2005	Priority date (day/month/year) 07.01.2004	
International Patent Classification (IPC) or national classification and IPC INV. C09D1/00			
Applicant KEMIRA PIGMENTS OY et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input type="checkbox"/> sent to the applicant and to the International Bureau) a total of sheets, as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in Item 4 of Box No. I and the Supplemental Box.</p> <p style="margin-left: 20px;">b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input checked="" type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand  02.11.2005		Date of completion of this report  10.07.2006	
<p>Name and mailing address of the international preliminary examining authority:</p> <div style="display: flex; align-items: center;"> <div> <p>European Patent Office - P.B. 5818 Patentlaan 2</p> <p>NL-2280 HV Rijswijk - Pays Bas</p> <p>Tel. +31 70 340 - 2040 Tx: 31 651 epo nl</p> <p>Fax: +31 70 340 - 3016</p> </div> </div>		<p>Authorized officer</p> <p>Matthijssen, J-J</p> <p>Telephone No. +31 70 340-3885</p> <div style="text-align: right;"> </div>	

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/FI2005/000008

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on
  - ☒ the international application in the language in which it was filed
  - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
    - ☐ international search (under Rules 12.3(a) and 23.1(b))
    - ☐ publication of the international application (under Rule 12.4(a))
    - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1-19 as published

**Claims, Numbers**

1-10 as published

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
    - ☐ the description, pages
    - ☐ the claims, Nos.
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing (*specify*):
    - ☐ any table(s) related to sequence listing (*specify*):
  4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
    - ☐ the description, pages
    - ☐ the claims, Nos.
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing (*specify*):
    - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/FI2005/000008

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**Box No. II Priority**

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1. ☒ This report has been established as if no priority had been claimed due to the failure to furnish within the prescribed time limit the requested:  
☐ copy of the earlier application whose priority has been claimed (Rule 66.7(a)).  
☒ translation of the earlier application whose priority has been claimed (Rule 66.7(b)).
2. ☐ This report has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rule 64.1). Thus for the purposes of this report, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	1-9
	No: Claims	10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/FI2005/000008

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: FR2738836

D2: US6352581

This International Preliminary Examination Report has been established on the bases of the documents made available in the International Search Report.

**1 Novelty**

The subject matter of claim 1 is not unambiguously defined for the following reasons (Article 6 PCT):

The phrase "the power of the  $\text{TiO}_2$  to bind itself to the surface" is an apparent implicit feature of  $\text{TiO}_2$ . Any  $\text{TiO}_2$  particle would bind itself to the surface and would therefore be novelty destroying for this feature of claim 1.

$\text{TiO}_2$  is insoluble in water and does therefore not form an aqueous solution, but an aqueous dispersion.

The phrase "the composition remains on the surface even after physical removal" is a contradiction in terms and is interpreted in view of description page 5, line 33 - page 6, line 2.

1.1 The present application pertains to a method for treating a surface with titanium dioxide, characterized in that:

The surface is treated with a nanocrystalline  $\text{TiO}_2$  composition in the form of i) a powder or ii) an aqueous solution with a  $\text{TiO}_2$  concentration equal or higher than the concentration where the solution becomes thixotropic.

Optionally the composition can be spread on the surface by means of water. Any excess nanocrystalline  $\text{TiO}_2$  is removed from the surface. And the remaining  $\text{TiO}_2$  forms a photocatalytic and/or dirt-repellent layer on the surface (claim 1).

The application further relates to the use of nanocrystalline  $\text{TiO}_2$  as powder or thixotropic aqueous solution for treating surfaces (claim 10).

The attention of the applicant is drawn to the fact that the optional feature in claim 1 has no limiting effect on the scope of the claim (PCT Guidelines 5.40).

- 1.2 The document D1 discloses (the references in parentheses applying to this document): A method of rendering a substrate photocatalytic by coating the surface with an aqueous nanocrystalline  $\text{TiO}_2$  composition and thus obtaining a self cleaning surface. The composition comprises 1-300g/l  $\text{TiO}_2$  with a particle size of 2-60 nm and appears therewith not to be thixotropic (page 1, line 13-19; page 2, line 20-22; page 3, line 21-22 and line 36-38).

Therefore, the subject matter of claims 1-10 is novel in view of D1 (Article 33(2) PCT).

- 1.3 Document D2 relates to a transparent coating composition based on silica sols made thixotropic with a sheet silicate, to its preparation and to its use for reducing the soiling tendency of facades (column 1, line 6-32; column 1, line 66 - column 2, line 13).

The composition is thixotropic to avoid splashing and running when applied to vertical surfaces.

Therefore, the subject matter of claims 1-10 is novel in view of D2 (Article 33(2) PCT).

## 2 Inventive step

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 10 does not involve an inventive step in the sense of Article 33(3) PCT.

- 2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document): A method of rendering a substrate photocatalytic by coating the surface with an aqueous nanocrystalline  $\text{TiO}_2$  composition, where the  $\text{TiO}_2$  is comprised at 1-300g/l. The subject-matter of claim 1 therefore differs from this known composition in that: the  $\text{TiO}_2$  content is at least as high as rendering the composition thixotropic. The applicant has not shown that thixotropy of the composition gives rise to a technical

effect. However, thixotropy is considered a trivial aspect of a coating composition. Coating compositions are generally thixotropic to improve the applicability to the substrate.

The problem to be solved by the present invention may therefore be regarded as to provide an alternative dirt repellent composition that can easily be applied. When following the teaching of document D2, the skilled person would add an additive in the form of a synthetic inorganic sheet silicate to the composition to arrive at a thixotropic composition. Thus, not arriving at the solution of claim 1.

Therefore, the subject matter of claims 1-9 involves an inventive step (Article 33(3) PCT).

- 2.2 The subject matter of claim 10 is silent about the content of the  $\text{TiO}_2$ . Therefore the solution to the problem posed obtained by combining the teaching of D1 and D2 i.e. a method of treating a surface with a dirt repellent composition made thixotropic with a synthetic inorganic sheet silicate, falls within the scope of claim 10.

Therefore, the subject matter of claim 10 does not involve an inventive step (Article 33(3) PCT).

### 3 Industrial applicability

The present invention is applicable in the field of rendering surfaces dirt repellent.